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ABSTRACT

This booklet is the ninth of a series of 16 booklets that together describe and present findings for a study which involved field observations and a survey of science teaching and learning in American Public schools during the school year 1976-77. The study was undertaken to provide the National Science Foundation with a portrayal of current conditions in K-12 science classrooms to help make the Foundation's programs of support for science education consistent with national needs. Eleven high schools and their feeder schools were selected to provide a diverse and balanced group of case study sites. One field researcher was assigned to each site and instructed to find out what was happening and what was felt important in science (including mathematics and social science) programs. The case study report from the "Columbus, Ohio" site is contained in this booklet. (MN)

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Booklet VIII
School Without Schools: Columbus, Ohio's Educational Response to the Energy Crisis of 1977

James R. Sanders and Daniel L. Stufflebeam

SE 024 484

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Case Studies in Science Education
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270 Education Building
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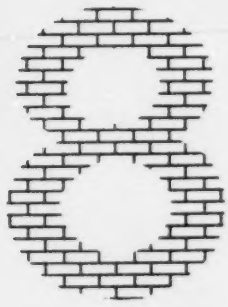
BOOKLET VIII

"SCHOOL WITHOUT SCHOOLS":

COLUMBUS OHIO'S EDUCATIONAL RESPONSE TO THE ENERGY CRISIS OF 1977

James R. Sanders and Daniel L. Stufflebeam
Evaluation Center
Western Michigan University

January-February 1977



School without schools: enough in name alone to quicken the professorial heartbeat of anyone interested in the pedagogical enterprise! The Columbus story tells us how teachers were expected to and did perform in a setting for which they had received not the slightest bit of training. It should not surprise us that the teaching did not prove to be a festival of creative response to the political necessity for teaching in places other than the classroom. The teachers simply did not know the territory.

While it should be obvious to all that knowledge of subject matter has little relationship to the effectiveness of the teacher, one suspects that teacher training might aid its clients through an increase in attention paid to techniques for instructing learners in places other than the classroom.

The pattern of elementary teachers working outside of schools as they did in school is clear in the Columbus report.

> *Subject areas being emphasized by classroom teachers at the elementary level during School Without Schools were reading, spelling, and mathematics. Teachers reported that they had been requested by central administrators to concentrate on these basic skill areas. Some history and social studies topics were being taught, but there was very little attention given to science.*

The science curriculum, especially at the elementary level, was revealed to be weak in both the School Without Schools Program and the regular school program. Science is a little-taught subject by many teachers at the elementary level.

Those at the elementary level who did teach science mainly followed a textbook.

A similar profile was charted for the secondary teachers in both science and non-science subjects.

Teachers reported that there was considerable pressure to cover material that would normally be taught during this period. Most felt that they were one to two weeks behind after regular school resumed. Teachers also were relieved that structure and rules returned to normal after School Without Schools.

The reader with a socio-anthropological bent will find the discussions of turf intriguing: "I don't want anyone coming from another school to start using MY laboratory and MY chemicals [or equipment]."

Of course the nonconformists were noted. "One biology teacher offered his students a two-week trip to Florida under his supervision; and having received about ten volunteers, packed several vans and took the group to Florida along with a couple of parent chaperones."

One of the summary items offered by Sanders and Stufflebeam wraps it all up:

We saw that School With Schools was the most effective component of the School Without Schools Program.

A decade ago Seymour Sarason studied the manner in which schools change and how we try to change them. His tenet is upheld by Sanders' and Stufflebeam's study: "The more things change in education the more they remain the same."

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"SCHOOL WITHOUT SCHOOLS": COLUMBUS, OHIO'S EDUCATIONAL RESPONSE TO THE ENERGY CRISIS OF 1977

James F. Sanders and Daniel L. Stufflebeam

In 1977, Ohio, like much of the rest of the nation, experienced its coldest winter in more than a century. This fact, coupled with an acute shortage of natural gas to meet the heating needs of Ohio's industries, businesses and homes, presented a special emergency situation for all the school districts in the western half of the state. Heat levels had to be turned down in order to preserve pressure in the gas delivery system; and buildings, plants and animals in the school buildings, as well as expensive equipment, somehow had to be protected and preserved. More importantly, it was necessary in many cities in Ohio to close schools to the use of children and educators.

Rather than accept a mandated holiday for a month, the Catholic and public schools in Columbus, Ohio, decided to meet this challenge with an innovative response. They called it the School Without Schools Program. In effect, they decided to continue to pay educators to deliver education and to use the total community as the classroom for the delivery of instructional services. The community supported the Columbus schools in this program. Television and radio stations devoted more than twenty hours per day to the delivery of educational programs. Businesses and educational institutions in the area opened up their facilities to use by students and teachers. The community mounted a massive busing program to transport students to zoos, museums, libraries, industries, a police academy, and many other stimulating settings. Teachers convened their classes in homes, bank lobbies, and churches. In short, Columbus mounted, almost overnight, a total community education effort.

In the early stages of this program, the National Science Foundation decided to support a study that would describe and analyze the School Without Schools Program and assess its effects. NSF wanted to know particularly how math and science teachers responded to this type of emergency. They wanted to know what decisions had to be made in mobilizing this school district to do this program, and they wondered whether there is any merit in developing contingency plans based on the Columbus experience so that other schools might be prepared to meet a similar crisis. To address these questions, a team, based at Western Michigan University's Evaluation Center, was commissioned to conduct a study of the Columbus School Without Schools Program.

That study involved intensive efforts to gather appropriate information by various means. Experts visited Columbus both during and following the School Without Schools Program to observe it in action, to gather existing documentation, and to interview various people who were involved in, or affected by, the program. Randomly sampled groups of teachers, students, and parents were surveyed to obtain information about their experience and their perceptions of the program. Surveys were also conducted through the local newspapers; and Nielsen and Arbitron television ratings were collected and analyzed, since those ratings were taken during and following the time of the School Without Schools Program. Case materials including a television documentary, diaries and scrapbooks, and studies done by other researchers of the School Without Schools Program were collected. Hearings were conducted with teachers who taught over television; science, math and social studies teachers; and the Columbus PTA Council. People at all levels of the program, including individual parents, teachers, and students in the public schools were interviewed. Public and Catholic school administrators in area educational institutions, as well as personnel of the public media

stations and newspapers, were also interviewed. A massive amount of information bearing on the School Without Schools Program was thus amassed.

This report presents a segment of the findings, particularly those that deal with issues of math, social studies, and science teaching. Additional findings are presented in the general study report.[1]

This report contains the authors' interpretations based on their review of a large amount of data. Citations to specific testimony and findings are presented to illustrate the main interpretations that we believe are warranted. While we attempted to choose anecdotes that would help the reader get a valid view of the background data, we realize that we could have chosen other anecdotes that would have formed a different perspective of the data. Also, the data we gathered certainly were far from the complete set that were available for collection. Overall, we gathered much data which we have attempted to distill and present here with helpful examples; we realize that our report is not complete and may be inaccurate in some unknown ways; but this report contains our best interpretations of the complex program called School Without Schools.

Observations contained in this report are presented in four sections. The first contains information about the setting and the program that was studied. The second provides a description of characteristics that were general to science, math, and social studies instruction at all levels of the Columbus Public Schools and the Catholic diocese during the School Without Schools Program. The third contains findings particularly relevant to elementary instruction, especially in science, and the fourth deals with instruction at the secondary level with an emphasis on science education.

An attempt has been made in this report to be descriptive rather than judgmental. However, it was not always possible to make this distinction because much of the data collected were people's perceptions concerning how well the program had operated.

THE SETTING AND THE PROGRAM

The Setting

Columbus, Ohio, is a capital city. According to the Columbus Area Chamber of Commerce, the population of the standard metropolitan area (1970 census) is 1,017,847. The city of Columbus itself has a population of 539,677, of which 19% is nonwhite.

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[1]Sanders, J. R., and Stufflebeam, D. L. A Study of School Without Schools: The Columbus Ohio Public Schools During the Natural Gas Shortage, Winter 1977. Kalamazoo, Michigan: Evaluation Center, Western Michigan University, 1977.

The city is served by the major state university and seven other colleges and universities within the surrounding area. In addition, there are four business and technical schools of higher education in the county. Columbus is a center of cultural activity in central Ohio with five major theaters, nine community theaters, two ballet companies, professional sports, and public recreation. Fourteen musical organizations, four fine arts galleries, and a number of cultural arts centers are also found in the city. It is the second-largest city in Ohio and twenty-first largest in the United States. It is also the only major city in Ohio showing an increase in population from 1970 until 1974.

The principal employers in Columbus are the State of Ohio, the Ohio State University, the federal government, the Columbus Public Schools, two large department store chains, the City of Columbus, Western Electric Company, and Ohio Bell Telephone. The impression one gets from a visit to Columbus is that it is a growing, vibrant, midwestern city with substantial resources that contribute to the cultural and educational well being of this community. Its population is a cross-section of American society.

The Columbus Public Schools serve approximately 96,000 students in 177 school buildings, which is a drop of about 14,000 students over the last ten years. The Catholic Diocese in Columbus serves another 15,000 students. The Columbus Public Schools' budget for the school year runs about $116,000,000, of which 87.1% goes to salaries and fringe benefits.

The Columbus Public Schools have had a history of close community relations evidenced by participation of school district administrators in community service organizations such as Kiwanis. Other evidence of this close relationship includes frequent meetings between school administrators and city and state government officials, periodic and frequent media presentations by school personnel over television and radio, and the existence of central administration staff assigned specifically to communicate district information to parents, legislators, government and business leaders, the media, and representatives of community special interest groups. The school board has had a good relationship with the superintendent and his central administration staff, supporting them at almost every turn.

However, the Columbus Public Schools did face several difficult problems in 1976-77. In November, 1976, a levy failed and the levy was to have been brought up again in June, 1977. Furthermore, the school district was involved in a desegregation suit brought about by the Columbus chapter of NAACP. The racial makeup of the schools is approximately 67% white and 33% nonwhite; and although no noticeable civil disturbances existed, the black community was concerned that the distribution of students to buildings within the district had historically segregated black students. The makeup of the school board is four whites and three blacks. Several votes, especially those relevant to the desegregation issue, followed racial lines.

Factors that led up to the School Without Schools Program included weather, politics, and economics. No one had anticipated that Columbus would experience the coldest winter in more than one hundred years in 1977, and this certainly has to be pegged as the main reason for the closing of all but thirty-six of Columbus' school buildings. Backup emergency gas supplies had been made available to users by Columbia Gas during August, 1976, but the price would have been higher for this supplementary gas and its offer carried the stipulation that the more expensive gas had to be used first. Because no one could have predicted the cold winter, the school administration made a fiscally prudent decision in August not to order the supplementary supplies. By the time the crisis hit in February, 1977, Columbia Gas had released the supplementary supply and it was too late to retrieve it. There were some strong feelings that a dispute between Columbia Gas and the Ohio legislature over the former's authority to assess Ohio residents for the acquisition and storage of contingency gas supplies was another cause for unpreparedness. Many charges and counter charges were heard during the school shutdown. One such charge was that Columbia Gas has released itsback-up supply of natural gas in order to make the residents of Ohio realize their dependence on

Columbis Gas for continued and adequate gas supplies during cold winters. Since the weather turned out to be much more severe than anticipated, the gas shortage was far greater than Columbia Gas officials or anyone else might have planned. Whether or not such charges are true, it was true that Columbia Gas and Columbia Transmission services were inadequate to meet the needs of Columbus and indeed of service areas through western Ohio.

The most noteworthy context factors preceding the School Without Schools Program were as follows:

a. The good relationship of the Columbus Public Schools with all segments of the community--parents, city and state government leaders, science organizations, business people, media leaders;

b. The good relationship of the Columbus Public Schools' central administration with the school board and teachers' union;

c. The strong second and third level administrative staff of the Columbus Public Schools;

d. The accessibility of the state legislature;

e. The cooperation of public and parochial school administrations in Columbus;

f. The extensive community resources available for educating children outside public school buildings;

g. Prior planning for a crisis contingency program in the event schools would be shut down; and

h. The nature of the crisis--a natural disturbance (vs. a civil disturbance).

Detailed context information is provided in the general study report.

The Program

The object of the observations contained in this report was the School Without Schools Program initiated by the Columbus Public Schools in response to a mandated shutdown of facilities by the Columbia Gas Company during February, 1977. The purpose of the shutdown was to conserve quickly disappearing supplies of natural gas so that homes, necessary facilities such as hospitals, and businesses could remain open. The School Without Schools Program began its operation on February 7, 1977, and concluded on February 25, 1977. The week following the School Without Schools Program was designated as a Spring vacation. This vacation time had been originally scheduled for April, but was moved up due to the natural gas shortages.

The design of the program was extensive and detailed. Furthermore, it was compiled and distributed to school personnel on short notice (within a week's time). Important elements of the design may be categorized as follows:

a. Communication

-to school personnel
-to students and parents
-to the community

Communication efforts included: (1) The School Without Schools Handbook made available to all school personnel and supplemented with written daily bulletins; (2) a telephone hotline; (3) a war room (of telephones) for school

building personnel to arrange field trips and have questions answered; and (4) daily bulletins in the newspapers and over radio and television.

b. Program

Instruction occurred via field trips, meeting one day per week in a school building, meeting outside the school with instructors, television, radio, newspapers, and working at home on assignments.

c. Facilities

Facility maintenance was achieved via detailed mothballing procedures by district custodial staff for those buildings that were closed and via regular maintenance procedures for those buildings left open. Safety and security were prime concerns when buildings were closed. Support personnel, such as the evaluation unit in the Columbus Public Schools, were used to aid in the maintenance of facilities.

d. Transportation

Busing students for field trips and scheduling new bus routes for the one day per week in-school sessions were the main concerns in transportation. Safety of children attending school functions received considerable attention. The City of Columbus, under Mayor Tom Moody's leadership, granted $25,000 to the Columbus Public Schools to support the increased transportation expenses that were due to the School Without Schools program.

GENERAL OBSERVATIONS PERTAINING TO EDUCATION DURING SCHOOL WITHOUT SCHOOLS

The importance of contingency planning for and during crisis situations was demonstrated in the School Without Schools Program. Both the Catholic Diocese and the Columbus Public Schools, as well as the State Department of Education, had rudimentary contingency plans of various forms available. The Catholic Diocese had planned for the eventuality of being closed out of their gas-fired buildings, and had projected that they would cycle their students through the other buildings that were heated by coal and electricity. This contingency plan became a general strategy of both the Columbus Public Schools and the Catholic Diocese throughout the energy crisis. Also, the Columbus Public Schools had developed a contingency plan months prior to the energy crisis, in case of a teacher strike; and each building principal had a building plan on hand in case of emergency. Furthermore, because of the Xenia tornado of several years ago, the Ohio Department of Education had developed contingency plans for school districts in the event of environmental or social emergencies; and this agency produced a detailed plan for closing down school buildings as a specific response to the 1977 natural gas crisis.

Several findings denoted the importance of contingency planning in this Columbus emergency. Both central office and building administrators pointed to the usefulness of advance planning that had been done, as well as to the day-to-day evaluation and planning during the crisis. These administrators praised the Ohio Department of Education for their detailed plan for mothballing a school building and complained only that the plan was not made available sufficiently early during the crisis. Also, some of these administrators were critical of Columbia Gas for not having done sufficient contingency planning. Moreover, many teachers thought that the main problems in the program were due to a lack of decisive and clear guidance at the outset of the program. There was widespread agreement

that better planning earlier and clearer communication of the plans at the outset of the program could have eased many teacher, principal, and student problems and probably would have led to more consistent and extensive use of the School Without Schools Program.

There were several persons, events, and decisions that shaped the education system during School Without Schools. First, there were strong leaders in both the public and Catholic schools in Columbus. The two school superintendents were able to stimulate and manage a massive and cooperative effort between the public and Catholic schools. To support them there were strong second and third level administrators. Further, curriculum specialists developed media presentations and evaluators provided administrative support.

Second, the Columbus Public Schools immediately involved the Columbus Education Association (CEA) in all planning and decision making for the emergency program. The superintendent reported that before he took any actions, he met with the CEA director and asked him for his thoughts about the idea. The superintendent did not move until the CEA director said, "Let's go with it." Moreover, decisions about moving the Spring break from April to February and about the nature of teacher (and hence, student) involvement (eventually defined as voluntary except for the one day per week in school) had to be negotiated between the superintendent and the CEA. Teachers were expected to teach in a host school the one day per week, and were asked to be creative in pursuing learning activities, perhaps along nontraditional lines, the remainder of the time. It was agreed that no checks would be made on how teachers spent their time during School Without Schools.

Probably because of the permissiveness (voluntary nature) of the program, there was great variability in the extent to which students and teachers participated in the out-of-school portion of School Without Schools. Also, this decision may have accounted for some decrease in attendance at School Without Schools activities that proceeded from the first through the second through the third weeks of the program. Apparently, a "novelty effect" was operating during the first week and probably stimulated and sustained involvement of a great many students at first. However, this seemed to begin wearing off during the second and third weeks as more and more students stayed away from the out-of-school activities. Moreover, no particular category of students stayed away any more than any other. Several teachers at both the elementary and secondary levels commented that they were not sure how much longer than three weeks the program could be sustained.

Third, early offers of emergency help from a local commercial television and radio station, the newspapers, Ohio State University, and a few other community agencies actually started the ball rolling for the community involvement aspect of the program. Without these offers stimulating a wealth of other offers, community reaction may have been too slow to help.

Concerning the program itself, there were a number of general conclusions made by observers. First, and probably most obvious to all, teaching and learning seemed to suffer by comparison to regular programs under the School Without Schools conditions. Even though there was no intent to make School Without Schools a replacement for the regular program, a comparison did reveal deficiencies in School Without Schools that could have been overlooked. School Without Schools was seen to pose a threat to the educational well-being of the college-bound eleventh and twelfth graders who needed to maintain content coverage in preparation for college and who needed as much preparation as they could get for the coming college entrance examinations. These students also worried that a hiatus in instruction experienced in the School Without Schools Program would have a negative effect on GPA. City-wide testing results and SAT scores compiled at the end of the school year indicated that student test performance was not hurt by School Without Schools. Average performances at the grade levels that were tested showed slight gains in 1977. It appeared that there was a slowdown in instructional pace during School Without Schools, but that lost ground was made up by the end of the school year. In general, it seemed that School Without Schools

was seen by teachers and outside observers to work best at the elementary level, next best at the junior high level, and least well at the high school level. Overall, almost everyone agreed that there was nothing sufficiently compelling and desirable about School Without Schools that would warrant its repetition as a regular program. However, it was accepted as a successful emergency program.

Second, it should be noted that there were many features of School Without Schools that were constructive and viewed by most as desirable. Social integration was aided because of the integrated learning that occurred when schools came together in the few buildings that were open to the students and because of the integrated tours and other activities throughout the program. Also, School Without Schools revealed it could work well for self-directed and parental-directed learners. Considering what was seen to work best in School Without Schools, participants noted that the School With Schools portion of the program (one day per week) was the most used and most effective of all the program elements. Next in effectiveness and frequency of use were the many homework assignments that were given. The third most used and effective element seemed to be the tours, especially at the elementary level. It must be added that the tours added a little flavor of science education not found in the regular program. While the TV was the most visible part of the program and the one that received the most national acclaim, it was also one of the weakest instructional parts of the School Without Schools Program. This was not because the programming and presentations were poor, but because there was little motivation to use them or opportunity to relate them to the programming and teaching being done by individual teachers. There was little advance involvement of regular teachers in curricular decisions; and advance information about what would be on the media--which was needed by the teachers in order to plan for and use this service--was missing.

Third, the crisis evoked public services from people and agencies throughout the community. Early on there was a cooperative response and this response had a positive effect on how the community viewed itself and its schools. The Columbus Public Schools recorded the number of different non-school facilities used for instructional purposes during School Without Schools. All were used heavily. The record of use was as follows:

Private homes	693
Recreation Centers	29
Churches	59
Banks	12
Restaurants	28
Fraternal	3
Private Recreational	16
Hospitals	9
Hotel/Motel	4
University/Schools	7
Businesses/Stores	33
Apartment Party Houses	16
Day Care/Community Centers	39
Federal Government	1
Library Branches	19
	968

Fourth, School Without Schools enhanced the public relations of the schools in Columbus. Teaching and learning were made more visible, especially on TV and radio; School Without Schools resulted in increased and improved parental involvement in education. There was clearly some creative, stimulating teaching that impressed people throughout the community. At the same time, however, the program did reveal some poor, unmotivated teaching.

Finally, the School Without Schools experience prepared school personnel in Columbus for handling emergency closings if they should occur in the future. In the area of science education alone, and just considering decisions that had to be made regarding books and equipment, the closing of buildings proved to be extremely complex. At the elementary level, all liquid chemicals had to be flushed down a sink, aquaria and aquaria filters and pumps had to be drained, living creatures needed homes, and plants and terraria required protection from the cold. Teachers had to keep records of textbooks taken home and had to monitor use of consumable workbooks. At the secondary level, in addition to the actions listed above, teachers had to find homes, and keep records, for calculators and other sensitive equipment. Every aspect of the school system required attention and responsible action by school personnel.

The most important general educational implication of the School Without Schools Program related to planning. It made apparent the importance of contingency plans at all levels of the system. It also raised again the possibility of instituting winter vacations with the addition of school days during the summer months. However, while it raised the question of winter vacations, observations also confirmed that socially such a change would be resisted by teachers and parents. Overall, School Without Schools was an interesting example of a community's collective and innovative response to a common major emergency.

ELEMENTARY SCIENCE EDUCATION DURING SCHOOL WITHOUT SCHOOLS

Although not unique to science education, there were observations unique to education at the elementary level. Holding elementary sessions in secondary buildings created some problems. Facilities, such as blackboards and desks, were outsized for elementary students. The presence of high school and elementary students together created some problems for the elementary students when high school students forgot to be considerate of the little persons. There was no adequate playground for recess outside and there were no large toys for kindergarten students inside. Also, elementary teachers found it was difficult to maintain discipline with elementary students in big secondary buildings. However, in one high school cafeteria, teachers were surprised to find that it was easier to socialize elementary kids in the movable chairs and tables than in their normal classroom. Children's interest was high only in the classrooms where games were played. In classrooms where students were meeting with their teacher only once a week, interest was low and the children were restless. In many classrooms it was observed that the teacher's role was more that of a facilitator than teacher as he or she had children complete assignments or gave individual help as needed.

In many respects, School Without Schools was seen to be more appropriate for the elementary level than for either the junior high or the high school levels. One reason for this is because elementary students have a single teacher, with that teacher feeling direct and complete responsibility for a single group of children. At other levels, responsibility is diffused across several teachers for a given group of students and across several groups of students for a given teacher. Single teacher responsibility was seen as potentially much stronger than the diffused responsibility found at the secondary level as a means to promote the learning of students who are not in a highly structured environment. Overall, it must be said that School Without Schools was observed to maintain instruction better at the elementary level than at the secondary level.

Methods used in elementary level classrooms during School Without Schools included question/answer discussions, teacher demonstrations, workbook assignments, and individual help. Out-of-class methods included meeting in small groups, attending to TV and radio

instruction, using the newspaper school supplement (Classroom Extra), contacting teachers by telephone, and going on field trips. Elementary teachers found their small group contacts to be quite productive. Teachers working with small groups of children in places outside the school discovered they were becoming better acquainted with their children and were teaching more material than would have been possible in the regular classroom. This was so because of the small groups of students teachers had formed. This was much different from the large group instruction most engaged in during the regular program. Some said their small group contacts were more successful than their one day in school contact. One first grade teacher found that two children who she thought were possible retentions had made so much progress during School Without Schools as a result of small group work and parental help that they would probably not be retained this year.

Transporting one's own materials or borrowing those in a host school were a particular problem that the elementary teachers faced during School Without Schools. One teacher said she had to haul three boxes of materials into the school just to teach reading, spelling, and math. Organizing for the one day in school and organizing all the material for the out-of-school assignments was found by many elementary school teachers to be a formidable task.

Subject areas being emphasized by classroom teachers at the elementary level during School Without Schools were reading, spelling, and mathematics. Teachers reported that they had been requested by central administrators to concentrate on these basic skill areas. Some history and social studies topics were being taught, but there was very little attention given to science.

The science curriculum, especially at the elementary level, was revealed to be weak in both the School Without Schools Program and the regular school program. Science is a little-taught subject by many teachers at the elementary level.

Those at the elementary level who did teach science mainly followed a textbook. A second grade teacher said she had attended grade level science workshops for Columbus teachers and had been given all the science supplies she needed. She said all teachers had the opportunity to attend these workshops. The obvious inference was that teachers could get assistance to teach science; but that for whatever reasons, they resisted and did not use such assistance. Reasons given for not teaching science in the regular or School Without Schools Programs at the elementary level were: dislike of the textbook, dislike of a textbook approach, lack of equipment, lack of knowledge to teach science, lack of time, the need to share textbooks, and the fact that science was graded every other six weeks. The generality of these reasons cannot be judged, but it is suggested that they could be pursued as hypotheses concerning why there seems to be so little science being taught in the elementary grades of the Columbus Public Schools. Other than science-related field trips, few teachers planned science lessons for their classes. One teacher took her class to her home to learn how to care for and feed horses. Another teacher related that she had had the children play a science game patterned after a Columbus television program called "In the Know," in which students from two schools compete by demonstrating their knowledge of various topics. This teacher's questions for her "In the Know" game were based on an "out of school" science assignment.

The use of field trips was highly variable both in terms of teachers' employment of them and in terms of the purposes for which they were used. Reasons given by teachers for taking field trips were: to supplement a social studies or science lesson that had been taught before school closed, to extend science concepts, to enrich children's experiences, and to serve as motivation for discussion when school resumed. For example, one sixth grade teacher with a predominantly black class did not meet with her children for instruction outside school; but she did take small groups of students to the Center of Science and Industry, the Ohio State School for the Blind, the Black Cultural Center, the Lincoln LeVeque Tower, and the TGI Friday, a mod restaurant in Columbus, for enrichment experiences. Some

of the field trips (to the Center of Science and Industry, Ohio wild flowers and trees display and the bird refuge at Blendon Woods Pond, environmental and planetarium laboratories, etc.) created a science flavor in the elementary portion of the School Without Schools. This suggested that expanded use of field trips would be one way to build the science curriculum in a district that has been apparently resistant to science at the elementary level. Only one elementary teacher gave a reason for not meeting outside school with her students. She said they were not motivated to learn and would not attend.

Elementary teachers were divided about the success of School Without Schools. Some said it caused students to drop hopelessly behind. Others said students would get as much attention as they did during the regular program, and maybe more. Most seemed to indicate that School Without Schools was making the best of a bad situation. Some elementary teachers saw many successful aspects of School Without Schools. Frequently mentioned aspects were parental help and cooperation, community support, small group and individualized instruction, opportunities to tutor slow learners, and stimulation provided the students for their own self-directed learning. At best, School Without Schools was judged by teachers to be a remedial program for slow learners. Generally it was seen to be a holding pattern at the elementary level. After several observations, it was concluded by the team of experts that elementary teaching was not innovative during or following School Without Schools. Teachers were observed to use conventional methods of teaching and stressed the basics.

SECONDARY SCIENCE EDUCATION DURING SCHOOL WITHOUT SCHOOLS

The general observations made on pages five through eight of this report about the condition of education during School Without Schools applied equally to elementary and secondary science education. These general points will not be repeated. There are some additional points, however, that appeared to be unique to secondary education; and further, there were observations that could be separated among the categories of secondary math education, science education, and social studies education.

It was evident during the three-week School Without Schools Program plus one week vacation that more written work/homework was being assigned to students than was assigned in the regular program. This heavy emphasis on homework showed up at the secondary level across all subject areas. A second general observation at the secondary level was that great confusion existed over grading during School Without Schools. Even after the normal program resumed, both teachers and students were unsure whether grades would be assigned for the period as: (1) pass/fail, (2) extra credit, or (3) grading as usual. A third, fairly pervasive, aspect of secondary education was the relief felt by teachers to get back into regular session after School Without Schools ended. Teachers reported that there was considerable pressure to cover material that would normally have been taught during this period. Most felt that they were one to two weeks behind after regular school resumed. Teachers also were relieved that structure and rules returned to normal after School Without Schools.

In secondary mathematics, the typical method of teaching during School Without Schools involved review of homework, brief explanations, and question-answering. Help sessions were provided by most teachers either during the one day a week at school or outside the classroom. The teaching methods were observed to be not very different from the regular program. Exceptions to this general observation included observing one teacher using special activities and projects as a method of teaching, another teacher using frequent testing which was not evident during regular sessions, and a third teacher using learning packages that she had developed. The learning packages were seen as one of the most innovative approaches used by those secondary math teachers who were observed. There were

also numerous incidences of teaching enrichment material in secondary math during School Without Schools. Two examples were the teacher taking the opportunity to teach probability and statistics and another teacher teaching number theory. Both topics were ones that would not have been covered under normal conditions.

Few math teachers used the media or field trips during School Without Schools. Only one of the teachers observed at the secondary level in mathematics was attempting to use the television lessons as a component of instruction. A few others had suggested to students that they watch the television programs, but these teachers were not integrating it with their classwork. Teachers frequently commented that content of the television programs was not made known to them until after they had already planned their lessons, and they apparently felt no repsonsibility for using the television lessons. Others noted that the content of the television lessons did not parallel their own instruction, and hence, did not attempt to incorporate television into their classes. Radio and newspapers were used even less often than television by math teachers.

Several teachers felt that students had suffered more in mathematics than in other classes. The comment was made, "School Without Schools was more difficult for science and math than for social studies because one unit builds on another, especially in math." One teacher was giving quizzes to add marks for grading purposes rather than marking on the basis of one test. Another secondary math teacher noted that her evaluation of the students' work done during School Without Schools showed that performance was poorer than usual. This teacher and her student teacher had made a special effort to integrate TV lessons with work sheets and text material into learning packages for the students; and both teachers had been available to the students extra hours beyond the once-a-week class session. Their geometry students did not take the initiative to come in for extra help. They seemed to have watched the first TV lesson, but none after that. These teachers' Algebra II students also were a disappointment. They did not do as well on the tests and homework on rational numbers as was expected. The teachers attributed this to the fact that the students were not mature enough to do so much of the algebra on their own, even with their guidance through the learning packages and the in-class sessions. They felt that the three-week period was especially hard on students in the upper level math courses. These teachers were interesting to observe because of the special efforts they had put into School Without Schools. They demonstrated that it was possible to be creative and productive under crisis conditions. Not all of their efforts went unrewarded. Some of their contemporary math students who had four special projects to do in addition to the learning packages pleasantly surprised them. They said that some of the students who had usually not responded well to the regular work had made good attempts on the projects. They also commented that the nature of the projects (a home floor plan, a personal cash flow record, a family budget for a month, and income taxes) had made them much more aware of the students' home life and of the problems students bring to school than did any previous work they had done.

In secondary science the typical method of instruction was one of "hand in the assigned homework and we'll discuss it." Demonstrations and laboratory exercises were greatly reduced during School Without Schools. Reasons given varied, but the two following were voiced frequently: (1) "Not enough time in one class period when you have to give assignments and collect papers"; (2) "I don't want anyone coming from another school to start using MY laboratory and MY chemicals (or equipment), and I wouldn't go into another school and use another teacher's laboratory and use his chemicals (or equipment)." Communication and cooperation about equipment use needed to be encouraged and facilitated. One teacher felt that the administration should have mandated that each teacher mount a complete educational program. This might have included instruction, laboratory, help sessions, and evaluation plans. There was a recognized need for self-contained instructional units or packages. Such packages might include objectives, references, materials, worksheets, evaluation materials or activities. Observation of secondary science education indicated that many students were really not used to reading in order to learn. They had become dependent upon oral and visual learning.

Science instruction in the secondary schools during School Without Schools could generally be characterized as follows:

a. Worksheets

The students were given handouts either prepared by or selected by the teacher; these handouts included questions and problems related to the topics under study. The students were to complete these worksheets and problems from week to week.

b. Lecture and Discussions

The time in class was spent in discussing questions and difficulties encountered by the students. These difficulties were identified by the students in some cases, and by the teacher in other cases. The response to student questions or teacher-identified needs was mostly in a lecture mode once the difficulty was clarified.

c. Extra Sessions

The teachers generally had some additional contacts arranged with the students. They were basically of three types: field trips, help sessions or telephone contact. Attendance was low at these additional meetings. Teachers seemed to feel that the students who were most in need did not attend,

d. Laboratory

There was little laboratory activity.

There were a few interesting projects in secondary science that were created by individual teachers. One student teacher asked the students in his biology class to keep records of food intake, energy output, and weight change for part of a unit on nutrition. At the end of School Without Schools, students reported their data and discussion followed. Another biology teacher offered his students a two-week trip to Florida under his supervision; and having received about ten volunteers, packed several vans and took the group to Florida along with a couple of parent chaperones. He said the group learned a lot during those two weeks observing different botanical and zoological specimens as they appeared in nature. The appropriateness of this activity might be questioned, since the students who went to Florida were not present in Columbus to pursue their total program of study. Again, it would seem apparent that the elementary organization, that has one teacher per group of children, was more conducive to the full out-of-school activities than was the secondary program, which has several teachers crossed with several groups of students.

In secondary social studies, like secondary science, the typical method used during School Without Schools was "hand in the assigned homework and we'll discuss it." Observed classroom periods involved about 65% of class time in independent work by students and 25% in students asking questions and teachers providing answers. The remaining 10% was spread over many different activities.

Some social studies teachers took advantage of School Without Schools to provide their students with experience and discussions that ordinarily would not have occurred. One secondary sociology teacher took the opportunity to develop a survey of student attitudes toward School Without Schools as a class project. The questionnaire developed by the class was administered to a sample of secondary students. The data were analyzed and written up in a research report. Another teacher called each student every week for a one-half hour conversation about their social studies lesson (morals and facts). A third used in-school

time for reading and note-taking activities and discussion of Russian political concepts. The reading done by the class was George Orwell's Animal Farm, assigned for the purpose of reviewing and criticizing concepts associated with communism. The teacher went around the room speaking to individuals when signaled by raised hands. Student attention in this class seemed to be very much directed on doing the assignments.

In retrospect, School Without Schools presented secondary science teachers and their students with an opportunity to diverge, to open up, to get out of the routine. Some took the opportunity and were gratified. Most did not at the secondary level; and, as at the elementary level, once classes resumed, little noticeable residue in science education from School Without Schools remained.

IN SUMMARY, WE SAW

- a high degree of professionalism and dedication on the part of the teachers, but also some poor teaching.
- a great deal of traditional teaching and only a modicum of creative instruction.
- the idea of massive instruction over the public media tested, but it did not work.
- that School With Schools was the most effective component of the School Without Schools Program.
- that math, science, and social studies, in that order, are important parts of Columbus programs; but also that these topics are often not taught very well--especially at the elementary levels.
- that contingency planning both before and during a crisis is an art that educators should master.
- vividly that education is and must be the concern of all segments of society, especially during an emergency.
- that Columbus has good community strength, and that they can muster it in the face of a common enemy.
- a tough-minded and competent performance on the part of the public and private schools, but a weak performance by the gas company.
- that none of us are the masters of our own destinies, and that working together is often essential.
- finally, that School Without Schools could be described as total community involvement in making the best of a bad situation.

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Jim's teaching interests (evaluation methods, research methods, statistics and measurement) and research interests (field experiments, testing, assessment, and research and evaluation methodology) are reflected both in the projects in which he has participated and in his publications. The former include work with the USOE Clearinghouse for Applied Performance Testing; statewide assessment projects for Alaska, Hawaii, Oregon and Washington; the Graduate Program Development Project for the Faculty of Education at the University of British Columbia; and the External Masters Degree Project at the Western Michigan University Evaluation Center. His publications include articles in the Review of Educational Research, Educational Researcher, Journal of Educational Psychology, Educational Technology, and the Journal of Research

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Daniel Stufflebeam has been the Director of the Evaluation Center and Professor of Education at Western Michigan University since 1973. Previously, he served for two and a half years as a public school teacher in Iowa and Chicago and for ten years at the Ohio State University, where he advanced from instructor to professor and where he directed the test Development Center and later the Evaluation Center. Recipient of a Ph.D. in measurement and research methodology from Purdue University (1964), he has also participated in a post doctoral program in statistics and experimental design at the University of Wisconsin (1965).

He has chaired several important committees including the NCME Board's Finance Committee, AERA's Research Training Committee, the PDK National Study Committee on Evaluation, and the PDK 11th National Symposium on Educational Research. He is currently the chairman of the Joint Committee on Guidelines and Standards for Educational Evaluation and is a member of the AERA/APA/NCME Committee on the Review of the Standards for Educational and Psychological Tests. He has also served on the editorial boards of the Journal of Higher Education, Educational Technology, Evaluation Comment, and Evaluation and Program Planning: An International Journal.

He has served as lecturer at the University of New Hampshire and the University of Jyvaskyla, Finland, and has been an advisor to numerous governmental and educational agencies.

At Ohio State University he performed research on the item sampling technique and educational change, directed the development of more than 100 standardized tests (including eight forms of the GED tests), developed the CIPP Evaluation Model, and assisted several local, state, and national agencies to install evaluation systems. Since moving to Western Michigan University, he has conducted several major evaluation studies, has codirected an AERA traveling training institute in evaluation, and currently is directing or codirecting projects to develop standards for educational evaluation, to study the Columbus, Ohio, public school system's response to the energy crisis of 1977, and to assist Western Michigan University to install a university-wide program review system.

He coauthored the book Educational Evaluation and Decision Making, and his articles and book reviews have appeared in JEM, Educational and Psychological Measurement, Psychometrica, Kappan, Journal of Research and Development in Education, Theory into Practice, Studies in Evaluation, the Journal of Higher Education, and in several books of readings.